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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,694	09/07/2007	Toshio Yoshihara	920_097	9473
25191	7590	03/23/2012		
BURR & BROWN PO BOX 7068 SYRACUSE, NY 13261-7068			EXAMINER ROBINSON, ELIZABETH A	
			ART UNIT 1787	PAPER NUMBER
			MAIL DATE 03/23/2012	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary****Application No.**

10/594,694

**Applicant(s)**

YOSHIHARA ET AL.

**Examiner**

Elizabeth A. Robinson

**Art Unit**

1787

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 November 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 5) ☒ Claim(s) 1,2,4-20,24 and 25 is/are pending in the application.
- 5a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 6) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 7) ☒ Claim(s) 1,2,4-20,24 and 25 is/are rejected.
- 8) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 9) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 10) ☒ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-806)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_
- Paper No(s) Mail Date \_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 23, 2011 has been entered.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 2, 4-20, 24 and 25 are currently pending.

### ***Specification***

The amendment filed November 23, 2011 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: The amendment to Paragraph 118 still retains the word "e.g." before the cleaner name. This is broader than originally disclosed, since the original specification gave just the cleaner name, not that the cleaner name was an example of cleaners that could be used.

Applicant is required to cancel the new matter in the reply to this Office Action.

***Claim Rejections - 35 USC § 112***

**Claims 1, 2, 4-20, 24 and 25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.** The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 1 adds the limitation that the fine particles are subjected to a graft treatment with polydimethylsiloxane having an OH group on both ends thereof. While the instant specification provides support for one specific polydimethylsiloxane having a specific average molecular weight, it does not support the more generally claimed polydimethylsiloxane, which could have a different molecular weight and could also have additional linking groups between the polydimethylsiloxane and the OH end group. All other claims depend from claim 1 and thus, also fail to comply with the written description requirement.

**Claims 17-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Claim 17 recites the limitation "said hardcoat layer" in two places in line 4. There is insufficient antecedent basis for this limitation in the claim. There is no hardcoat layer claimed in claim 1, from which this claim depends.

Claim 18 recites the limitation "said hardcoat layer" in line 4. There is insufficient antecedent basis for this limitation in the claim. There is no hardcoat layer claimed in claim 1, from which this claim depends.

Claim 19 recites the limitation "said hardcoat layer" in line 4. There is insufficient antecedent basis for this limitation in the claim. There is no hardcoat layer claimed in claim 1, from which this claim depends.

Claim 20 recites the limitations "said hardcoat layer", "said anti-dazzling layer" and "said other refractive index layer" in line 3. There is insufficient antecedent basis for these limitations in the claim. There is no hardcoat layer, anti-dazzling layer or other refractive index layer claimed in claim 1, from which this claim depends.

***Claim Rejections - 35 USC § 103***

**Claims 1, 4-8, 11, 12, 14-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niimi et al. (WO/03/027189), in view of Shimizu et al. (US 5,013,585).** The Examiner is using Yoshihara et al. (US 2005/0038137), hereafter referred to as Yoshihara '137, as the English language equivalent of the World document.

Regarding claim 1, Yoshihara '137 (Paragraphs 218-228) teaches an antireflective laminate comprising a base material, additional layers and an outermost low refractive index layer. The substrate layer should have a transmittance closest to transparency (Paragraph 227). The materials that the layer is formed from (Paragraph 202) include inherently transparent materials such as triacetate cellulose, acryl based

resins and polycarbonate, for example. The low refractive index layer (abstract) comprises inorganic superfine particles. The particles (Paragraphs 131-132) have a particle size of 1 to 500 nm, preferably 1 to 100 nm. The particles can have a surface treatment to render the particles hydrophobic (Paragraph 135), in order to improve their dispersibility in a solvent or liquid monomer/oligomer. The surface treatment can be with an alkoxy silane (Paragraphs 137 and 138).

Yoshihara '137 does not teach that the surface treatment is performed with polydimethylsiloxane having an OH group on both ends thereof.

Shimizu (Column 3, lines 44-68) teaches a surface treatment that renders the surface of silica particles more hydrophobic than those processed with an alkoxy silane, in order to improve dispersibility in a solvent. The compound reacted with the surface of the particles can be a polydimethylsiloxane having an OH group on both ends thereof (Column 6, line 52 through Column 7, line 43).

It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the silane particle treatment of Yoshihara '137, with the surface treatment of Shimizu, in order to ensure the particles are more hydrophobic to improve their dispersibility.

Regarding claim 4, particles rendered hydrophobic would not be fully wetted with water.

Regarding claims 5 and 6, the low refractive index layer (abstract) can also comprise a binder that comprises an ionizing radiation cured group and a polar group. The polar group (Paragraph 91) can be a hydroxyl group.

Regarding claims 7 and 8, the low refractive index layer (Paragraph 102) can also comprise a fluorine containing compound comprising a completely fluorinated alkyl group.

Regarding claim 11, the layer would be formed from the same type of materials as claimed and thus, would exhibit the same contact angle with water.

Regarding claim 12, the low refractive index layer has a refractive index of 1.45 or less (Paragraph 46).

Regarding claims 14 and 15, the intermediate layer can be a hardcoat layer or a high- or middle- refractive index layer that has hardcoat characteristics, which have refractive indices that meet the limitations of claim 15 (Paragraphs 219-222).

Regarding claim 16 and 18, the hardcoat layer (Paragraph 220) can comprise a filler that makes the layer have internal diffusibility to reduce glare (anti-dazzling agent).

Regarding claims 17 and 20, either an antistatic layer can be provided on the substrate or the hardcoat, high-refractive index layer or middle-refractive index layer can have an antistatic agent (Paragraph 223).

**Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Niimi et al. (WO/03/027189 (using Yoshihara et al. (US 2005/0038137) as the English language equivalent) in view of Shimizu et al. (US 5,013,585), as applied to claim 1 above, and further in view of Yoshihara et al. (JP 2002-079600), hereafter referred to as Yoshihara '600.**

As stated above, Yoshihara '137, using the surface treatment of Shimizu to provide better dispersibility to the particles, teaches an antireflective laminate that meets the limitations of claim 1. Yoshihara '137 (Paragraph 212) further teaches that the haze of the low refractive index layer should be limited.

Yoshihara '137 does not teach the surface roughness values for the outer surface of the low refractive index layer.

Yoshihara '600 (Paragraphs 16-17) teaches that a low-refractive index layer should have the surface roughness controlled to a ten point mean roughness of 100 nm or less and an arithmetic mean roughness of 2 to 10 nm in order to obtain a haze of 1% or less.

It would have been obvious to one of ordinary skill in the art at the time of the invention to control the surface roughness of Yoshihara '137 to a ten point mean roughness of 100 nm or less and an arithmetic mean roughness of 2 to 10 nm, in order to obtain a haze of 1% or less as taught by Yoshihara '600.

**Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Niimi et al. (WO/03/027189 (using Yoshihara et al. (US 2005/0038137) as the English language equivalent) in view of Shimizu et al. (US 5,013,585) as applied to claim 1 above, and further in view of Nakamura et al. (US 2003/0202137).**

As stated above, Yoshihara '137, using the surface treatment of Shimizu to provide better dispersibility to the particles, teaches an antireflective laminate that meets the limitations of claim 1. The intermediate layer of Yoshihara '137 can be a hardcoat



layer or a high- or middle- refractive index layer that has hardcoat characteristics, which have refractive indices that meet the limitations of claim 19 (Paragraphs 219-222).

Yoshihara '137 does not teach the thickness of these layers.

Nakamura (Paragraph 122) teaches the layer thicknesses required for a high refractive index layer, based on the refractive index of the layer, to provide antireflection to the surface.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the formulas of Nakamura, to determine the layer thicknesses of Yoshihara '137, in order to have layer thicknesses that provide appropriate antireflection to the surface. Based on the refractive index of the layer, the claimed thicknesses would be met.

### ***Response to Arguments***

Applicant's arguments filed November 23, 2011 have been considered.

Applicant argues that the amendments to the specification are along the lines of what was indicated would overcome the specification objections. However, the amendment to Paragraph 118 still retains the word "e.g." before the cleaner name. This is broader than originally disclosed, since the original specification gave just the cleaner name, not that the cleaner name was an example of cleaners that could be used. Thus, the specification objection is maintained.

Applicant's arguments regarding the 35 U.S.C. 112, second paragraph rejections from the July 28, 2011 Office Action are persuasive and thus, those rejections are withdrawn.

Due to amendments to the claims, the 35 U.S.C. 102(b) and 103(a) rejections from the July 28, 2011 Office Action are withdrawn.

Applicant argues that Yoshihara et al. (US 2005/0038137) does not teach the claimed polydimethylsiloxane having an OH group on both ends thereof. The teachings of Shimizu et al. (US 5,013,585), presented above, address this limitation.

Applicant argues that Yoshihara '137 teaches that the polymer grafted on the particles should have a reactive functional group. As noted by Applicants, this was only one of the teachings of surface treatments that the particles could be subjected to. The teachings of Shimizu replace the coupling agent treatment, not the polymer grafting treatment.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth A. Robinson whose telephone number is (571)272-7129. The examiner can normally be reached on Monday- Friday 8 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Elizabeth A. Robinson/  
Examiner, Art Unit 1787

March 21, 2012